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Regional Economic Impact Analysis For the Proposed Deerfield Wind Project

Prepared for
Deerfield Wind, LLC

by Thomas E. Kavet and Nicolas O. Rockler

Originally Issued for the USFS EIS Process in
February 2008,
Reissued in June 2008, With Project Revisions

Regional Economic Impact Analysis For the Deerfield Wind Project Proposed by Deerfield Wind, LLC

Initially Produced for the USFS EIS Process in February 2008; Reissued with Project Revisions in June 2008, by Kavet, Rockler & Associates, LLC

1) Overview and Summary

The purpose of this analysis is to evaluate the regional economic impacts associated with the Deerfield Wind Farm proposed by Deerfield Wind, LLC (hereafter, DWL) in the towns of Searsburg and Readsboro, in Bennington County, Vermont. The project consists of the construction and operation of 15 wind turbines with a total nameplate electric generation capacity of approximately 30 megawatts.

The total economic investment associated with this project is expected to exceed \$85 million, concentrated in Bennington and Windham counties. The average net output of the facility is expected to be about 95,600 MWh per year, supplying enough energy to power more than 13,000 Vermont homes. Assuming the necessary permits and approvals are granted, the planned construction of the project is expected to occur in 2010, with full annual operation expected in 2011.

The analysis herein shows the construction and operation of the project will bring significant economic benefits to Bennington County and the State of Vermont, resulting in the creation of more than 250 jobs during the construction and development period in 2008-2010 and about 9 permanent new jobs in 2011 and beyond. About half of both the initial employment gains and the new permanent jobs are expected to be in Bennington and Windham counties. This project could generate more than \$750,000 in State tax revenues during the construction and development phase, with ongoing State revenues totaling more than \$10 million over the 20 year initial life of the facility. The direct fiscal benefits to the towns of Searsburg and Readsboro are expected to exceed \$2,500 per resident per year in Searsburg, where 8 of the 15 turbines are to be located, and more than \$215 per resident per year in Readsboro, where 7 of the 15 turbines are planned.

This analysis demonstrates a clear need for new electrical generating capacity to meet the economic and population growth of Vermont and New England, and replace expiring energy sources in the near future. This analysis also considers the expressed desire of the State of Vermont and the New England region, through various legislative acts and other public initiatives, for the development of clean, renewable energy sources. This project satisfies both of these imperatives, generating significant additional electrical capacity – much or all of which is expected to be sold within the State - and providing clean, safe, reliable and competitively priced power to Vermont residents.

2) Economic Impacts in Vermont

The proposed Deerfield Wind development is expected to represent a total investment of approximately \$85 million in current 2010 U.S. dollars, with a development and construction phase in 2008-2010 and full annual operation commencing in 2011. The direct expenditure stream from the operation of the facility is expected to total nearly \$3 million per year, about 40% of which will be associated with in-State expenditures, including two and a half full-time permanent employees at the facility. The economic impacts associated with the proposed development were evaluated with the use of a detailed regional economic and demographic model that estimates all direct, indirect and induced economic impacts.

Economic Model Background

The core economic model used to perform the regional economic impact analysis herein was developed by Regional Dynamics, Inc. (REDYN)¹. The REDYN model is a dynamic, multi-regional, nonlinear, endogenous, Input-Output (I/O) economic and demographic model based on the North American Industrial Classification System (NAICS). The model is based on I/O methodology, with detailed make and use tables and social accounting matrix features for all entities, a comprehensive commodity production transformation function, and impedance-based commodity trade flows developed by Oak Ridge National Laboratories.

The model estimates employment, output, wages, occupations, income, gross product, demand, self-supply, trade flows and demographic impacts associated with user-defined economic events, such as the subject analysis. All model inputs associated with this analysis were developed with general project data from IRI and in consultation with the REDYN model architect, Dr. Thomas Tanner. The model specification included all construction, development, equipment purchases, and estimated operational expenditures. Based on these direct inputs, the REDYN model estimates secondary indirect and induced impacts for the region and state, as well as demographic impacts.

The REDYN model constructed for this analysis consists of three regions: Bennington County; a Balance of Vermont region combining the remaining 13 Vermont counties; and a Balance of U.S. region encompassing the remainder of the country.

Economic Model Inputs

More than half of the \$85 million total investment will be for specialized wind turbines and associated turbine systems that are not manufactured in Vermont, and thus will result in virtually no in-state economic impacts. The primary economic impacts in Vermont will be associated with the development, construction and operation of the proposed generation facility. Approximately 38% of the roughly \$37 million in construction and development expenditures and about 41% of the ongoing \$3 million per year in operational expenditures are expected to result in direct Vermont impacts.

¹ See www.regionaldynamics.com for additional methodological and background information on the REDYN model

Economic Model Output

During the construction and development phase, this project will generate total employment gains in the State of approximately 250 jobs, with about half of these in Bennington and Windham counties. In 2011 and beyond, operation and maintenance of the wind turbines will generate a total employment impact in the State of about 9 jobs, with at least 5 of these expected to be in Bennington and Windham counties.

In addition to these jobs, the project will generate growth in total State economic output of more than \$15 million during construction and development, with ongoing annual disposable income gains of more than \$850,000 per year. State General and Transportation Fund fiscal impacts (excluding Education Fund property taxes) are expected to exceed \$750,000 during the construction and development phase and total more than \$4 million over the 20 year life of the project. Direct State and local property tax payments are expected to total approximately \$700,000 per year, with additional federal land lease payments of about \$210,000 per year. Via local property tax payments, the Town of Searsburg is expected to receive about \$240,000 per year, or more than \$2,500 per resident per year, based on the estimated 2006 Town population. The Town of Readsboro is expected to receive at least \$170,000 per year, or more than \$215 per Town resident per year through local property tax revenues. Because the project is expected to generate very little in the way of new demand for state or local services, most of the property tax payments from this project are expected to result in reductions in local property taxes and concomitant increases in disposable income among existing Searsburg and Readsboro Town residents. It is assumed that most of the State property tax revenues and Federal lease payments associated with this project will have similar, though more widely dispersed net economic effects.

The net economic impacts associated with this project represent significant economic benefits to the State and region. Given that Searsburg and Readsboro both have income and related economic metrics that are well below State and County averages (see Table 3, page 10), the economic benefits detailed herein may have enhanced fiscal, economic and social value.

Table 1
Selected Economic Impact Metrics, Relative to Baseline

Concept	Region	2010	2011	2012	2013 and beyond
Total Employment	Bennington County	111	5	5	5
Total Employment	Balance of Vermont	145	4	4	4
Disposable Income	Bennington County	3,437	486	488	489
Disposable Income	Balance of Vermont	5,560	384	385	386
Output (\$000)	Bennington County	6,234	1,678	1,724	1,792
Output (\$000)	Balance of Vermont	9,329	277	277	278
Wage Bill (\$000)	Bennington County	3,777	259	260	261
Wage Bill (\$000)	Balance of Vermont	5,330	129	130	130
Population	Bennington County	9	9	9	2
Population	Balance of Vermont	15	15	15	1
Tax Revenue (\$000)	State and Municipal Total	1,198	799	804	811

3) Socio-Economic Background and Historical Overview of Region

Readsboro, Vermont²

Readsboro is a small rural town located in south central Vermont on the Green Mountain plateau. The town is relatively isolated by rough terrain from the closest large Vermont towns of Brattleboro (30 miles to the west) and Bennington (23 miles to the east), and North Adams, Massachusetts (17 miles to the south).

Readsboro was established in 1769 by John Reade and 29 associates. The grant contained 20,480 acres in the southeast part of Bennington County. The Town was incorporated in 1886, and the Village in 1892. The mountainous terrain and the Deerfield River provided the backdrop for Readsboro's history. During its first century, Readsboro was a small agricultural and lumber town. It became a mill town in the late 1800's through the efforts of the Newton Brothers from Massachusetts, who built mills, as well as the Hoosac Tunnel and Wilmington Railroad, ending the isolation of the Town's residents.

The Hoosac Tunnel was an engineering marvel in its time. Completed in 1875, it is nearly 5 miles in length, and took 25 years to build. The Tunnel, along with the Wilmington Railroad, connected Readsboro to other cities and towns, and provided shipping to the industries in Boston and New York.



Hoosac Tunnel – West Portal, circa 1875

² Background and historical information excerpted from the Town of Readsboro Municipal Plan, adopted in 2005

In 1880, the 57 foot high Newton Dam, probably the highest in the U.S. at the time, was constructed along with the Deerfield River Pulp and Paper Mill. In the 1920's the Deerfield River was diverted by the building of the Harriman Dam, reducing the flow to a mere trickle.

The Readsboro Chair Co., a thriving business built in 1911 by Moses Newton on the banks of the West Branch of the Deerfield River, was the livelihood for many local and surrounding area residents. During its heyday, the Readsboro Chair Co.'s buildings stretched for two blocks. Over the years, the company manufactured folding chairs and tables, church and school furnishings, children's furniture and lawn and park furniture and, in its later years, pine and hardwood household furniture until it closed in 1988. The Town subsequently acquired the property, demolished the building, and created sites for new businesses.

In 1986, the Town and Village merged to become the Town of Readsboro. It remains a classic New England village, which provides a rural country atmosphere for its permanent residents and vacation/seasonal community members.

Readsboro is located in the southeastern corner of Bennington County on the Massachusetts state line. It is bordered by six towns: Searsburg, Woodford and Stamford in Bennington County; Whitingham and Wilmington in Windham County; and Monroe in Franklin County, Massachusetts. State Routes 100 and 8 are the main roads serving the community. The Town population center is located just 3 miles north of the Massachusetts border.

The Green Mountains are the principal element of the physical geography of Readsboro. The Town is located in the southeastern portion of the Green Mountain spine with the terrain consisting of many low mountains and hills. The Green Mountain National Forest covers approximately 36 percent of the land in Readsboro. The highest point is 3,119 feet above sea level.

The Deerfield River Watershed is also an important physical feature of the Town. The Village of Readsboro is located at the confluence of the West Branch of the Deerfield River and the Deerfield River. The South Branch of the Deerfield River flows through the southern part of the Town. Route 100 follows the West Branch, making the river an important scenic part of the local landscape.

Searsburg, Vermont³

The Town of Searsburg is situated on the eastern boundary line of Bennington County, and was chartered in 1781 to William Williams and 27 others. It was not surveyed or allotted until about the year 1800, and for many years afterward the town seems to have been an unbroken wilderness.

³ Excerpted from "A History of Searsburg," written by George J. Bond, Esq., in the late 1800's.

From about 1800 to 1828, Searsburg seems to have dropped out of existence. Very few titles of land passed from the original proprietors. During this period, a few people moved into town but the inclemency of the seasons induced them to move on. The Searsburg Turnpike, leading from Wilmington to Bennington, was begun in 1830, and for the next four years the population seems to have increased quite rapidly for a mountain town. The town was eventually organized in 1833.

According to the "*History of Searsburg*," by George L. Bonds, the first saw mill in town was built by James Crosier at the head of "Devil's Stair Falls", and had quite a run of business for several years. From this saw mill the inhabitants were engaged in clearing and improving their lands. In 1842, Squires and Swift built a tannery about one mile west of the Wilmington line on the Deerfield River. This enterprise employed ten or twelve hands and was very successful manufacturing annually upwards of one hundred tons of sole leather.

Lumbering and the manufacture of merchandise from wood dominated the chief capital and labor of the town for many years. The primary timber was beech, birch, maple, spruce, fir, and hemlock. A number of mills and manufacturing plants were operated throughout the latter part of the 19th century. In addition to saw mills, items manufactured included wash board, clothespins, grain measures, butter boxes, cot bedspreads, bedsteads, and bench screws, among others.

The primary soil in the area is a gravelly loam. Along the Deerfield River the soil is rich and yields good agricultural potential, but the town is quite hilly and only a small part is susceptible of tillage. Corn, oats, potatoes, and hay were grown successfully and wheat of good quality and good yield were also once raised in the area, but farming declined substantially after the Civil War. The town land was once also utilized for grazing, while the Deerfield River and its tributaries furnished a series of the best water power in southern Vermont, and cheap and unlimited supplies of hardwood lumber offered ample opportunity for related value-added manufacturing.

Little has changed since George L. Bond wrote the *History of Searsburg* in the late 1800's. The population has declined somewhat, and the mills and hotels that once provided employment have been gone since the early 1900's. Most of the land that had been stripped of timber to provide building materials and fuel for heating has since grown back to wilderness. All that remains of the agricultural past are the stone walls that once surrounded the open pasture land.

A significant recent development in Searsburg was the siting of one of the first commercial scale wind power facilities in New England, the largest such installation east of the Mississippi River when constructed in 1996. It is owned by Green Mountain Power (GMP) and is located on Mount Waldo, east of Route 8 on Sleepy Hollow Road. It began operating in 1997 and has eleven 550 kilowatt turbines. According to GMP, the plant has generated 110,000 megawatthours since it opened, the equivalent of approximately 14,000 Vermont homes being powered by wind for a full year.⁴

⁴ GMP press release, September 21, 2006.



View of two of Green Mountain Power Company's eleven wind turbines, in operation in Searsburg since 1997

In the general vicinity of Searsburg and Readsboro there are five colleges, including Bennington College (in North Bennington, VT), Marlboro College (in Marlboro and Brattleboro, VT), Landmark College (in Putney, VT), the School for International Training (in Brattleboro, VT), and Southern Vermont College (in Bennington, VT). In addition, Williams College is just over the state line in Williamstown, Massachusetts.

Bennington County, Readsboro and Searsburg – Demographic Data

As detailed in Table 2, U.S. Census data shows that Bennington County's population growth tracked very closely with the state throughout the 20th Century. In both cases, population was virtually unchanged in the first four decades of the Century. This was followed by stronger growth in the 1940's and a modest increase in the 1950's. The pace of growth accelerated in the 1960's and 1970's but rates have returned to more moderate levels since then. The rest of the state grew at a somewhat faster pace during the 1980's and 1990's.

**Table 2
Regional Population Growth, 1900-2000**

Year	Vermont		Bennington County		Town of Readsboro		Town of Searsburg	
	#	% change	#	% change	#	% change	#	% change
1900	343,641		21,705		1139		161	
1910	355,956	3.6%	21,378	-1.5%	1252	9.9%	142	-11.8%
1920	352,428	-1.0%	21,577	0.9%	1173	-6.3%	133	-6.3%
1930	359,611	2.0%	21,655	0.4%	1043	-11.1%	103	-22.6%
1940	359,231	-0.1%	22,286	2.9%	913	-12.5%	135	31.1%
1950	377,747	5.2%	24,115	8.2%	847	-7.2%	84	-37.8%
1960	389,881	3.2%	25,088	4.0%	783	-7.6%	73	-13.1%
1970	444,330	14.0%	29,282	16.7%	638	-18.5%	84	15.1%
1980	511,456	15.1%	33,345	13.9%	638	0.0%	72	-14.3%
1990	562,758	10.0%	35,845	7.5%	762	19.4%	85	18.1%
2000	608,827	8.2%	36,994	3.2%	805	5.6%	96	12.9%
% Change								
1900-2000								
		77%			70%			-29%
								-40%

Source: U.S. Census Bureau.

In contrast to this, the populations of Readsboro and Searsburg declined steadily from the early 1900's through 1980, plunging by more than 50% between 1910 and 1980. Since 1980, both towns have experienced population growth, though neither has regained their population level reached in 1940 or earlier in the century. During the 100 years of the 20th century, while Vermont and Bennington County experienced population growth of 77% and 70%, respectively, Readsboro's population declined by 29% and Searsburg's fell 40%.

Bennington County is largely rural and sparsely populated - especially the towns of Readsboro and Searsburg. Table 3 presents selected economic and demographic data from the 2000 Census and the Vermont Department of Taxes for Vermont, Bennington County, and the Towns of Readsboro and Searsburg.

**Table 3
Selected Socioeconomic Characteristics of the State of Vermont, Bennington County,
and the Towns of Readsboro and Searsburg**

Characteristic	Vermont	Bennington County	Town of Readsboro	Town of Searsburg
Population, July 2006 estimate ¹	623,908	36,929	785	92
Population, % change, 2000 - 2006	2.4%	-0.2%	-3.1%	-4.2%
Population, 2000	608,827	36,994	809	96
Population, % change, 1990 - 2000	8.2%	3.2%	6.2%	12.9%
Land Area, 2000 (square miles)	9,250	676	36.4	21.5
Persons per square mile (population density), 2000	65.8	54.7	22.2	4.5
White Persons, %, 2000	96.8%	97.7%	98.8%	100.0%
Blacks or African American persons, %, 2000	0.5%	0.4%	0.0%	0.0%
American Indian persons, %, 2000	0.4%	0.2%	0.5%	0.0%
Asian persons, %, 2000	0.9%	0.6%	0.2%	0.0%
Persons of Latino or Hispanic origin, %, 2000	0.9%	0.9%	1.1%	0.0%
Language other than English spoken at home, %, 2000	5.9%	4.4%	8.5%	0.0%
Foreign born persons, %, 2000	3.8%	2.7%	6.7%	0.0%
High School graduates, % of persons age 25+, 2000	86.4%	84.9%	77.6%	74.3%
Bachelor's degree or higher, % of persons age 25+, 2000	29.4%	27.1%	24.3%	0.0%
Persons with a disability, age 5+, 2000	97,167	6,632	135	35
Persons with a disability, % of Population	16.0%	17.9%	16.7%	36.5%
Median household income, 1999	\$40,856	\$39,926	\$35,000	\$17,500
Percent of Vermont median, 1999	100%	98%	86%	43%
Per capita money income, 1999	\$20,625	\$21,193	\$17,911	\$10,472
Percent of Vermont per capita money income, 1999	100%	103%	87%	51%
Persons below poverty, %, 1999	9.4%	10.0%	7.0%	17.5%
Average income per tax return, 2005 ²	\$48,562	\$51,131	\$31,855	\$27,309
Percent of Vermont average	100%	105%	66%	56%
Average income per tax exemption, 2005 ²	\$26,122	\$27,670	\$16,509	\$14,110
Percent of Vermont average	100%	106%	63%	54%
Median Value of Owner Occupied House, 2000	\$111,200	\$113,300	\$78,600	\$86,700

Sources: 1) U.S. Census Bureau, 1990 and 2000 Census, and Population Estimates; 2) Vermont Department of Taxes, 2005 data

As detailed in Table 3, various measures of income and earnings in Bennington County approximate those of the State of Vermont as a whole. The towns of Readsboro and Searsburg, however, report considerably lower median and average incomes than those in the County and State. The most recent data from the Vermont Department of Taxes, for example, show that the average adjusted gross income per tax return in Readsboro is 34% below the statewide average, while Searsburg is 44% below the Vermont average. The average adjusted gross income reported per exemption (which is similar to per capita income measures), shows Readsboro, at \$16,509, some 47% below the Vermont average of \$26,122, while Searsburg, at \$14,110, is 46% below the State average.

U.S. Census data also show that an unusually high percentage of Readsboro workers commute out of state to work (31% of all workers, vs. 13% in Bennington County and 7% in Vermont), due to the proximity of the township's population center just three miles north of the Massachusetts border and within about a half an hour from the North Adams, MA labor market. Of the 69% of the Readsboro workforce that works in Vermont, just over half (53%) work in Bennington County, despite the fact that Readsboro is considered a part of the Brattleboro "Labor Market Area" by the Vermont Department of Labor.

None of the 50 employed workers listed in the 2000 Census in Searsburg worked outside of the State and exactly half of them worked in Bennington County. Searsburg is considered to be a part of the Bennington "Labor Market Area," which includes the towns of Bennington, Glastenbury, Pownall, Shaftsbury and Woodford, all of which are east of Searsburg.

Bennington County – Regional Economic Data

Table 4 shows selected economic characteristics of Bennington County broken down in three ways: by occupation, industry, and class of worker. Note that in many cases we did not provide detailed information for Readsboro and Searsburg because of their size. For example, there are only 97 jobs in Readsboro (about half of which are private and half government) and only 2 jobs in Searsburg (both with local government).

The Town of Bennington dominates the economy of the southern portion of the county with almost half the total jobs and the lion's share of retail receipts. Interestingly, Bennington County's percentage of jobs in manufacturing is larger than the State's. Table 4 lists the major employers in the County.

The breakdown of the most recent data on Bennington County's labor force by industry is shown in Table 6. Note that in addition to some changes since 2000, the figures in Table 4 include self-employment, while the industry average annual employment in Table 6 does not.

Per Table 7, until recently, the County's unemployment rate had been slightly higher than the statewide rate but, as with the State, lower than the U.S. rate. In 2007, however, the rates for both the County and State have risen somewhat and are now within about a half a percentage point of the national rate.

Table 4
Profile of Selected Economic Characteristics, Bennington County, 2000¹

Subject	Number	Percent
Employed civilian population 16 years and older	18,680	100.0
Occupation		
Management, professional, and related occupations	6,056	32.4
Service occupations	3,033	16.2
Sales and office occupations	4,404	23.6
Farming, fishing, and forestry occupations	122	0.7
Construction, extraction, and maintenance occupations	1,966	10.5
Production, transportation, and material moving occupations	3,099	16.6
Industry		
Agriculture, forestry, fishing and hunting, and mining	295	1.6
Construction	1,406	7.5
Manufacturing	3,152	16.9
Wholesale trade	417	2.2
Retail trade	2,718	14.6
Transportation and warehousing, and utilities	446	2.4
Information	496	2.7
Finance, insurance, real estate, and rental and leasing	730	3.9
Professional, scientific, management, administrative, and waste management services	1,007	5.4
Education, health, and social services	4,428	23.7
Arts, entertainment, recreation, accommodation and food services	1,974	10.6
Other services (except public administration)	1,069	5.7
Public administration	542	2.9
Class of Worker		
Private wage and salary workers	14,256	76.3
Government workers	2,283	12.2
Self-employed workers in own not incorporated business	2,107	11.3
Unpaid family workers	34	0.2
Source: U.S. Census Bureau, 2000 Census.		

Table 5 - Partial List of Major Employers in Bennington County

Company	Town	Sector	Employees
Southwestern Vermont Medical Center	Bennington	Health services	877
Mack Group Inc	Arlington	Manufacturing	660
Vermont Country Store	Manchester	Retail	623
NSK Steering Systems America, Inc	Bennington	Manufacturing	600
Orvis Company Inc	Manchester	Retail	426
Bennington College	Bennington	Education	277
Energizer Battery	Bennington	Manufacturing	240
The Equinox	Manchester	Hospitality	235
Vermont Composites, Inc	Bennington	Manufacturing	170
Transistor Electronics, Inc	Bennington	Manufacturing	160
National Hanger Co, Inc	N. Bennington	Manufacturing	140
William E. Dailey, Inc.	Shaftsbury	Manufacturing	129
RK Miles, Inc	Manchester	Retail	115
Hemmings Motor News	Bennington	Publishing	100
Porta-Brace Inc	N. Bennington	Manufacturing	100
Southern Vermont College	Bennington	Education	100
Factory Point National Bank	Manchester	Financial	75
Applejack Art Partners	Manchester	Wholesale	62
Business Air, Inc	Bennington	Transportation	60
The Bank of Bennington	Bennington	Financial	57
JK Adams Co, Inc	Dorset	Manufacturing	55
Bromley Mountain Ski Resort	Peru	Hospitality	55
Bennington Potters, Inc	Bennington	Manufacturing	51
Bennington Banner	Bennington	Publishing	50
CTC Corporation	Bennington	Business Service	50
McGill Airflow Corp	Bennington	Manufacturing	50
NBC Solid Surfaces, Inc	Springfield	Construction	50
Abacus Automation, Inc.	Bennington	Manufacturing	50
Bennington Iron Works, Inc	Bennington	Manufacturing	47
H Greenburg & Sons Inc	Bennington	Retail	40
Morrison Sales & Service, Inc	Bennington	Retail	38
Vermont Country Foods	Manchester	Retail	35
Krone Optical Systems, Inc	N. Bennington	Manufacturing	33
Arlington Industries Inc	Arlington	Manufacturing	31
Whitman's Feed Store, Inc	N. Bennington	Manufacturing	30
Mace Security International, Inc	Bennington	Manufacturing	25
Vermont Container	Bennington	Manufacturing	25

Source: Vermont Business Magazine, 2004-2007, self reporting voluntary listing – does not include all employers

Table 6
Profile of Selected Economic Characteristics, Bennington County, 2000¹

Subject	Number	Percent
Employed civilian population 16 years and older	18,680	100.0
Occupation		
Management, professional, and related occupations	6,056	32.4
Service occupations	3,033	16.2
Sales and office occupations	4,404	23.6
Farming, fishing, and forestry occupations	122	0.7
Construction, extraction, and maintenance occupations	1,966	10.5
Production, transportation, and material moving occupations	3,099	16.6
Industry		
Agriculture, forestry, fishing and hunting, and mining	295	1.6
Construction	1,406	7.5
Manufacturing	3,152	16.9
Wholesale trade	417	2.2
Retail trade	2,718	14.6
Transportation and warehousing, and utilities	446	2.4
Information	496	2.7
Finance, insurance, real estate, and rental and leasing	730	3.9
Professional, scientific, management, administrative, and waste management services	1,007	5.4
Education, health, and social services	4,428	23.7
Arts, entertainment, recreation, accommodation and food services	1,974	10.6
Other services (except public administration)	1,069	5.7
Public administration	542	2.9
Class of Worker		
Private wage and salary workers	14,256	76.3
Government workers	2,283	12.2
Self-employed workers in own not incorporated business	2,107	11.3
Unpaid family workers	34	0.2

Source: U.S. Census Bureau, 2000 Census

Table 7 - Selected Labor Force and Unemployment Rates for Region and U.S.

Year	Bennington County			Unemployment Rates (%)				
	Labor Force	Employed	Unemployed	Bennington County	Readsboro	Searsburg	Vermont	U.S.
1990	19,012	17,982	1,030	5.4	5.0	2.0	4.9	5.6
1991	18,461	17,408	1,053	5.7	6.9	2.0	6.6	6.8
1992	18,849	17,671	1,178	6.2	7.1	0.0	6.4	7.5
1993	18,812	17,892	920	4.9	6.7	1.9	5.3	6.9
1994	19,163	18,270	893	4.7	5.2	1.9	4.6	6.1
1995	19,397	18,562	835	4.3	4.3	1.5	4.3	5.6
1996	19,795	18,880	915	4.6	5.5	1.4	4.4	5.4
1997	19,774	18,920	854	4.3	5.1	1.4	4.0	4.9
1998	20,032	19,323	709	3.5	3.3	1.3	3.1	4.5
1999	20,389	19,667	722	3.5	3.3	1.3	2.9	4.2
2000	19,936	19,369	567	2.8	2.8	14.8	2.7	4.0
2001	20,258	19,502	756	3.7	3.1	19.0	3.3	4.7
2002	20,314	19,363	951	4.7	4.5	37.5	4.0	5.8
2003	20,150	19,156	994	4.9	4.2	38.0	4.5	6.0
2004	19,946	19,149	797	4.0	3.7	37.2	3.7	5.5
2005	20,255	19,527	728	3.6	3.2	28.6	3.4	5.1
2006	20,884	20,138	746	3.6	3.4	7.1	3.6	4.6
2007 YTD ¹	20,755	19,905	850	4.1	5.1	7.3	4.0	4.6

Source: U.S. Bureau of Labor Statistics

1) YTD averages through October of 2007, derived from non-seasonally adjusted data

The unemployment rates in Readsboro and Searsburg, especially, are considerably more volatile over time than the State and County rates, since small changes in the number of unemployed can represent a large percentage of the labor force. Still, in recent years, Searsburg has experienced relatively high unemployment rates, while Readsboro has been comparable to Bennington County rates.

Although tourism is an important part of the Vermont economy, its impact varies considerably by county. As shown in Table 8, tourism provides one of every 7.5 jobs in Bennington County (13.4%), which is slightly more than the statewide average (11%). However, because of the comparatively low wages, tourism only represents 7.7% of total wages in Bennington County.

Employment in the tourist industry in Bennington County has been flat for a decade (-0.8% since 1996), in contrast with the State, which has seen modest growth (+6.7%).

The picture is similar for revenues from the Vermont tax on rooms, meals, and alcohol. Although revenues for Bennington County have increased 14% since 1999,⁵ they have not kept pace with inflation. The consumer price index for food away from home has grown 21% during that period, and lodging is up over 18%.⁶ On the other hand, statewide revenues from these taxes have grown 29% since 1999, which exceeds the rate of inflation.

⁵ Source: Vermont Tax Department.

⁶ Source: BLS.

Table 8
Tourism Jobs, Payroll, and Average Annual Wage by County, 2006

County	Tourism Jobs as % of Total Jobs	Tourism Payroll as % of Total Payroll	Avg. Annual Tourism Wage
Lamoille	27.4%	19.6%	\$20,612
Windsor	14.5%	7.8%	\$18,312
Windham	14.4%	7.7%	\$18,101
Bennington	13.4%	7.7%	\$18,336
Rutland	13.2%	6.3%	\$15,722
Grand Isle	11.4%	6.7%	\$15,518
Vermont	11.0%	5.2%	\$16,683
Chittenden	9.5%	3.7%	\$16,184
Washington	9.5%	3.7%	\$13,808
Caledonia	8.8%	4.3%	\$14,759
Addison	8.6%	4.1%	\$16,111
Orleans	8.6%	4.7%	\$15,398
Orange	8.2%	4.2%	\$15,177
Essex	7.7%	2.6%	\$9,875
Franklin	6.7%	2.4%	\$12,330

Source: VT Dept. of Labor, Covered Employment & Wages, QCEW, "Leisure & Hospitality"

Another useful index of local economic conditions is property transfers. As Chart 1 (next page) illustrates, Bennington County has tracked very closely with statewide trends.

Percentages for Readsboro and Searsburg are not as useful because of the small number of transactions. For example, sales of homes with < 6 acres and vacation properties in Readsboro increased 33% and 150% respectively from 1994 to 2006. However, in each case, the actual number of sales only grew from 9 to 12 and from 4 to 10. Searsburg has even fewer transactions. In the last 13 years, there have been only 78 valid sales, an average of only 6 per year.

Using smoothed three year rolling averages, so as to avoid single year anomalies, reveals that Readsboro has experienced steady growth in property transfers, in contrast to the state, which has declined considerably in the last few years. Searsburg has been relatively steady and has tracked closely with Bennington County.

Both Readsboro and Searsburg have relatively high shares of seasonal/vacation housing. As shown in Table 9, at the time of the 2000 Census about 23% of the 466 housing units in Readsboro and almost 45% of the 87 units in Searsburg were seasonal/vacation homes. Both of these shares exceeded the statewide share of seasonal homes, which was about 15% in the same year.

**Chart 1 - Annual Percent Change in Valid Property Transfers
Bennington County and Vermont, 1994 - 2006**

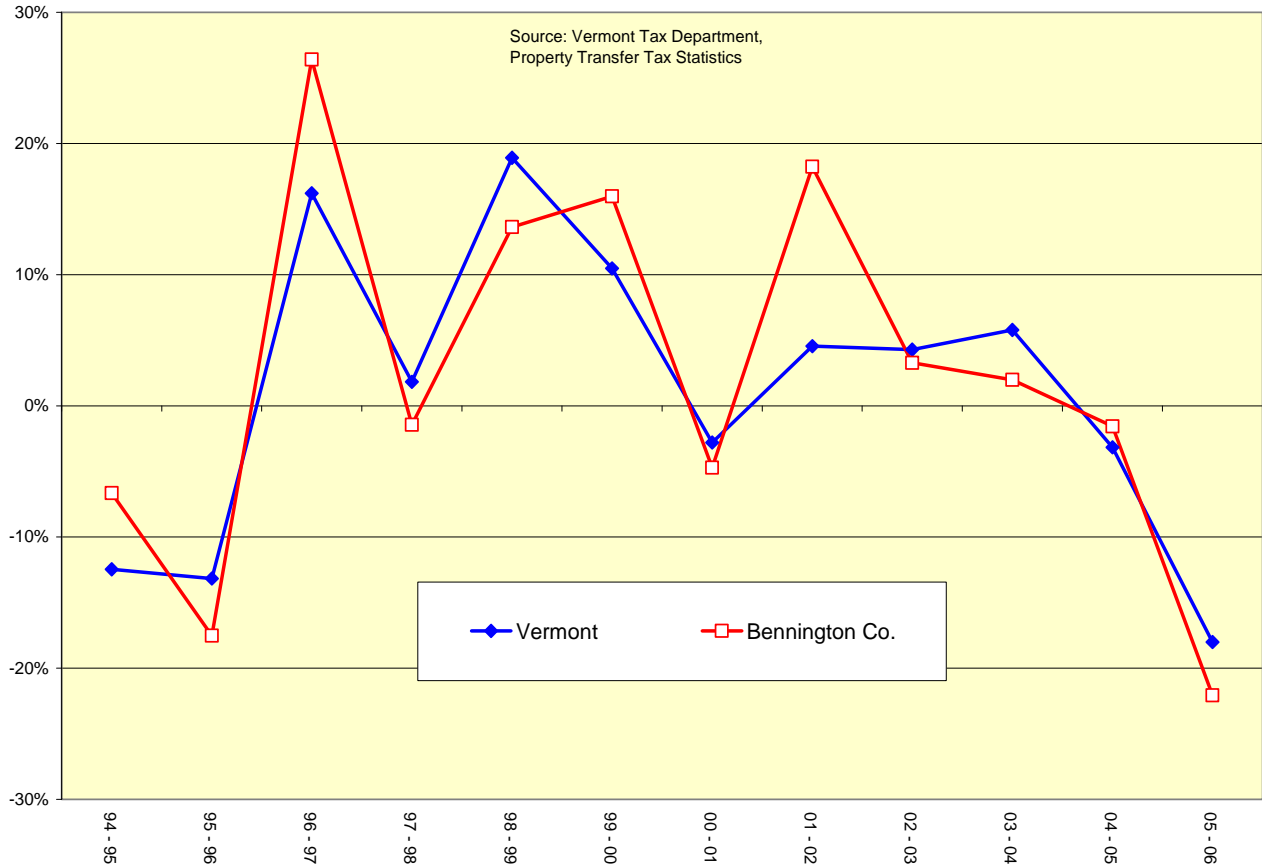
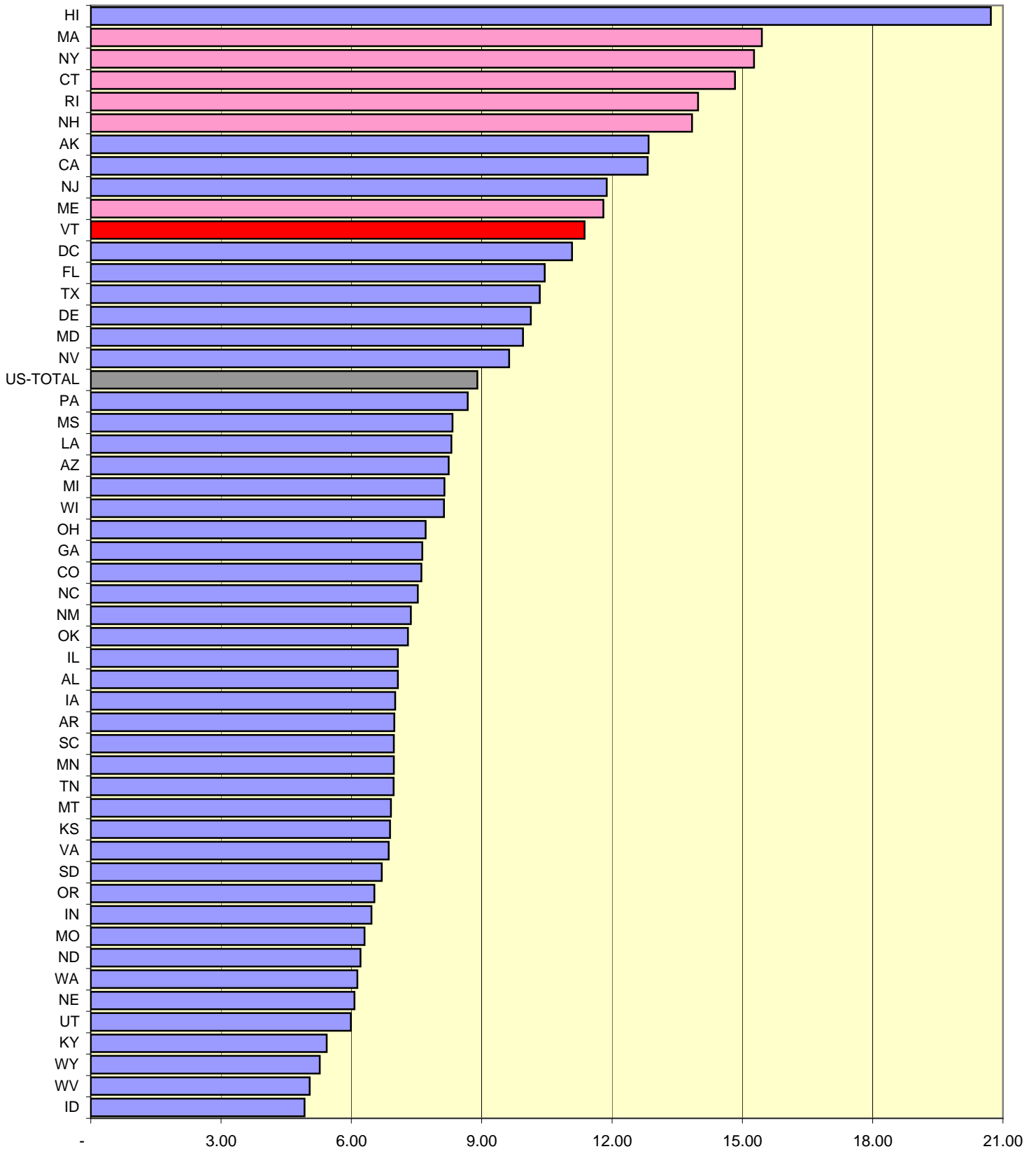


Table 9 - Selected Housing Characteristics - 2000 Census

Characteristic	Readsboro	Searsburg	Vermont
Total Housing Units	466	87	294,382
Occupied Housing	321	40	240,634
Owner Occupied Housing	229	37	169,784
Renter Occupied Housing	92	3	70,850
Percent Owner Occupied	71.3	92.5	70.6
Percent One Person Households	25.9	37.5	26.2
Percent Householders 65+ years	28.3	20.0	20.6
Average Household Size	2.44	2.40	2.44
Vacant Housing Units	145	47	53,748
Vacancy Rate - Owner Occupied	5.0	9.8	1.4
Vacancy Rate - Renter Occupied	6.1	0.0	4.2
Seasonal/Recreational (S/R) Housing Units	109	39	43,052
S/R Units as a Percentage of Total Units	23.3	44.8	14.6

Source: U.S. Census Bureau, 2000 Census

Chart 3 - Average State Electricity Prices, 2006
 (Total Electric Industry Average Price, Cents Per Kilowatthour)



Cents Per Kilowatthour - Source: U.S. Energy Information Administration

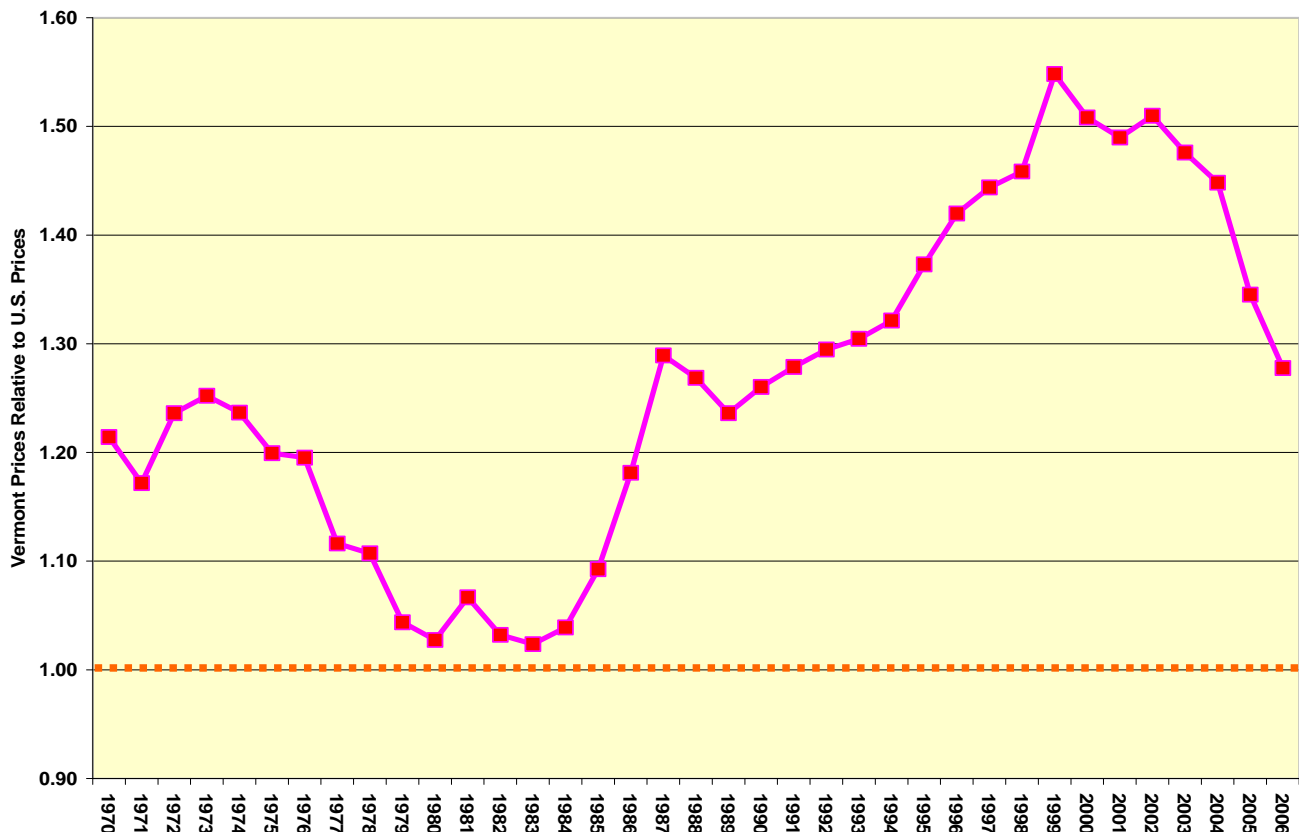
4) Analysis of Other Economic and Environmental Considerations

Energy Needs, Prices, Negative Externalities and Fuel Source Diversity

The economic need for this project has been clearly detailed in submissions from the project applicant to the Vermont Public Service Board by Synapse Energy Economics⁷. It shows that reliable, clean, safe, competitively-priced electric power is essential to the Vermont economy and economic growth in the State and region. The regional power sources Vermont and New England are now reliant upon are among the most expensive in the U.S. (see Charts 2 and 3), are prone to disruption and price escalation, and generate huge volumes of dangerous emissions and waste, some of which remain hazardous for tens of thousands of years and some of which threaten to alter the global climate with serious potential consequences.

Chart 2 - Average Electricity Prices: Vermont Relative to U.S.

(Source: U.S. Energy Information Administration, U.S. Department of Energy)



⁷ See: PSB Docket No. 7250, Exhibit DFLD-EH-2, and related direct and rebuttal testimony of Dr. Ezra Hausman

Since 1990, the New England region has become increasingly reliant upon fossil fuel generating capacity, especially natural gas. This has resulted in substantial emissions of greenhouse and other gasses, which included the discharge into the environment of 555,101,818 tons of carbon dioxide, 120,561 tons of sulfur dioxide and 59,817 tons of nitrogen oxides in 2006 alone.⁸ Emissions of CO₂, have been linked to global warming, while SO₂ and NO_x emissions cause acid rain, nutrient saturation in costal waters and river basins, crop damage, forest decline and loss of biodiversity.⁹

While Vermont's overall production and reliance on fossil fuel use is lower than most of the New England states, both the regional nature of the power grid and the fact that air pollution does not respect political boundaries renders this is an issue of regional importance.

The region's increased reliance on natural gas has also created transmission supply vulnerabilities that were illustrated during the pipeline disruptions associated with recent hurricanes that swept through supply origination and distribution points in the Gulf of Mexico. The New England Independent System Operator (ISO), which manages the regional electric system of which Vermont is a part, warns that "New England continues to face potential reliability risks and exposure to high wholesale electricity costs" as a result of its reliance on natural gas and oil to generate electricity."¹⁰

This concern underscores the critical need for fuel supply diversification in the region. As stated in the 2005 Vermont Electric Plan, prepared by the Vermont Department of Public Service, one of the major State energy priorities is to "ensure that Vermont's overall energy portfolio is sufficiently diverse, especially in light of the potential loss of major generating supplies."¹¹

Natural gas and petroleum prices, as illustrated in Chart 4 on the following page, have risen steeply in recent years, with oil prices soaring to more than ten times their level in 1999 and more than 97% in the last year. Natural gas prices have also escalated steeply, more than tripling since 1999, and spiking at almost 30% above their current rates during the supply disruptions caused by Hurricane Katrina in late 2005. Coal prices have also been rising in recent years – increasing by about 53% between 1999 and 2007. Because natural gas and petroleum are often the marginal fuels relied on for New England peak power generation, these price increases and heightened price volatility have rendered effective New England power prices anything but "stable."

Nuclear power is the second most important regional fuel source for electric power generation in New England and the largest single Vermont power source, via the Vermont Yankee facility in Vernon. While nuclear power does not emit greenhouse gasses and other particulates, as do fossil fuels, it does generate radioactive waste, some of which remains hazardous for tens of thousands of years. The long-term

⁸ These emissions are for the six New England states within the New England regional power pool, based on 2006 data from the U.S. Department of Energy, Tables EIA-767 and EIA 906, *U.S. Electric Power Industry Estimated Emissions*, at http://www.eia.doe.gov/cneaf/electricity/epa/emission_state.xls

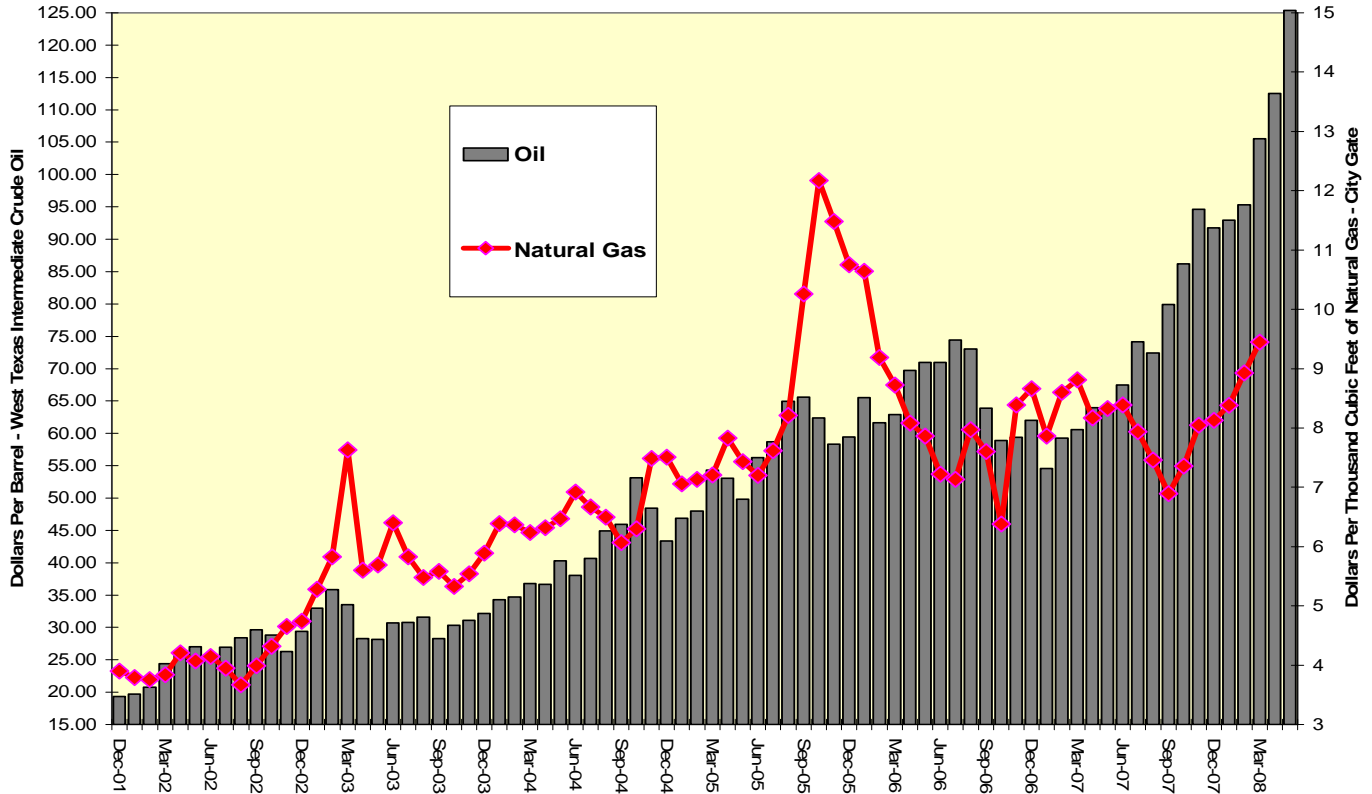
⁹ See: Vermont Agency of Natural Resources, *Wind Energy and Air Emissions Fact Sheet*, available at www.vermontwindpolicy.org/factsheets/Air%20Emissions1.pdf

¹⁰ New England ISO 2007 Regional Plan, October 18, 2007, page 6, available at: http://www.iso-ne.com/trans/rsp/2007/rsp07_final_101907_public_version.pdf

¹¹ See: Vermont DPS 2005 Vermont Electric Plan, page 9-13

storage of this waste has yet to be politically or scientifically resolved, and temporary on-site storage presents local safety and health risks that may also affect near-term licensing and power production. While nuclear power has a substantial record of safe operation, the costs associated with an accident (or intentional terrorist attack) could be truly catastrophic, as evidenced by the Chernobyl disaster. Additionally, even low level discharges of radiation may present long-term health risks to people living nearby or downwind from nuclear reactors.¹²

Chart 4 - Oil and Gas Prices Escalate and Remain Erratic
(Crude Oil Prices, Left Scale, Gray Bars; Natural Gas Prices, Right Scale, Red Line, Source: Economy.com)



While power generated by nuclear plants appears to be relatively cheap and stable in comparison to fossil fuels, nuclear power has been, and is, heavily reliant upon federal government subsidization for its development and continued existence. Without massive federal government expenditures on research and development, security, emergency management, waste transportation and storage, and liability insurance, nuclear power would not exist in today's market. The Energy Policy Act of 2005 added more than \$4.3 billion in new nuclear power subsidies, including \$2 billion in cost overrun support for the construction of up to six new nuclear power plants, \$1.25 billion for a nuclear test facility, tax breaks for power plant decommissioning costs, provisions

¹² See, for example, The Sierra Club, <http://www.sierraclub.org/nuclearwaste/low.asp>, and Radiation and Public Health Project, <http://www.radiation.org/>, for critical perspectives on this issue

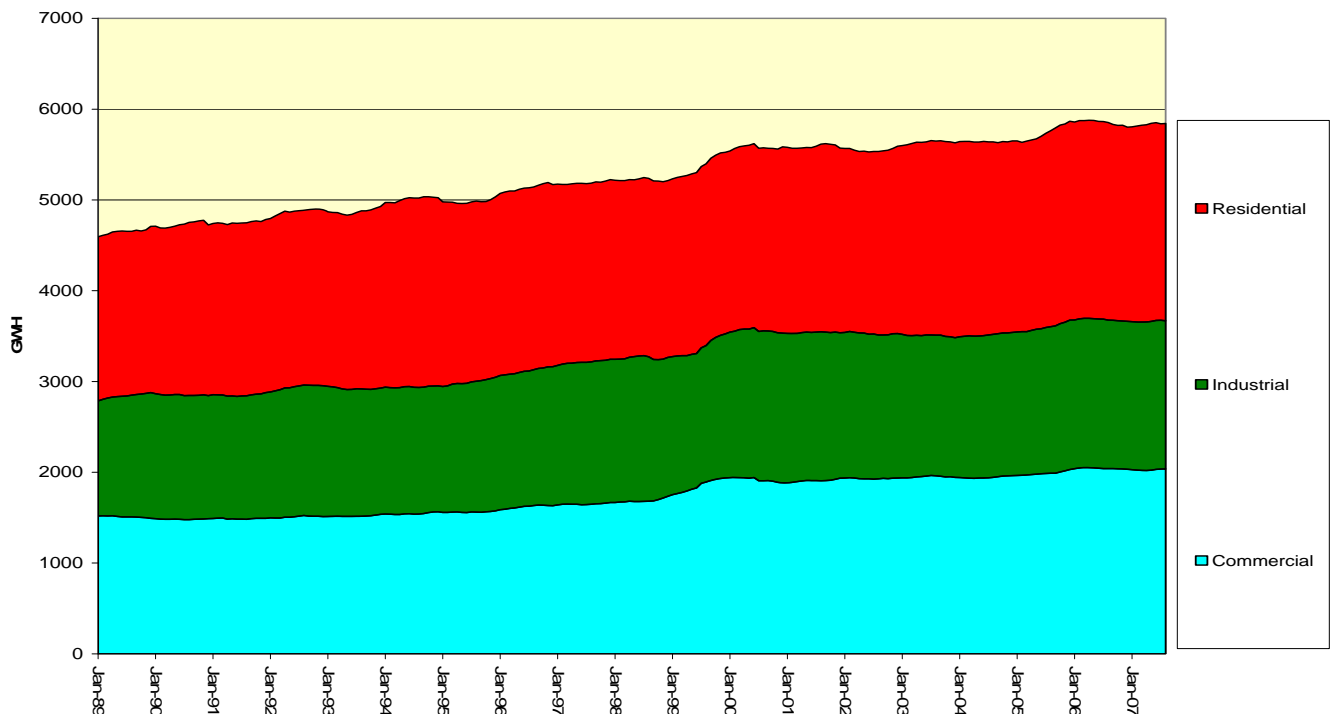
for federal disposal of high-level nuclear waste and a 20 year extension of the Price-Anderson Nuclear Industry Indemnity Act, without which no nuclear power plant could afford or obtain operating insurance.¹³

Wind power suffers from none of the negative externalities associated with fossil fuel-based or nuclear power generation. It is safe, producing clean, renewable power with no dangerous air or water emissions, at competitive, stable and predictable prices. It requires no shipping or transportation, no military presence to secure its availability, and does not contribute to global warming, petrochemical smog or ground level ozone. As a local resource, it generates not just electricity, but jobs, income and tax revenues for Vermonters and the communities in which they live.

Electricity Supply and Demand

The demand for electricity in Vermont has grown steadily over the past eighteen years, at a compound average annual rate of about 1.3% (see Chart 5 on following page). Commercial consumption has experienced the highest growth, at about 1.7% per year between 1989 and 2007, with industrial (+1.2%) and residential (+1.0%) growing more slowly. According to the ISO New England 2007 Regional System Plan, regional peak demand growth through 2016 is expected to grow at compound annual growth rates of 1.7% per year, or about 500MW per year.¹⁴

Chart 5 - Vermont Electricity Sales by Sector
(Source: U.S. Department of Energy)



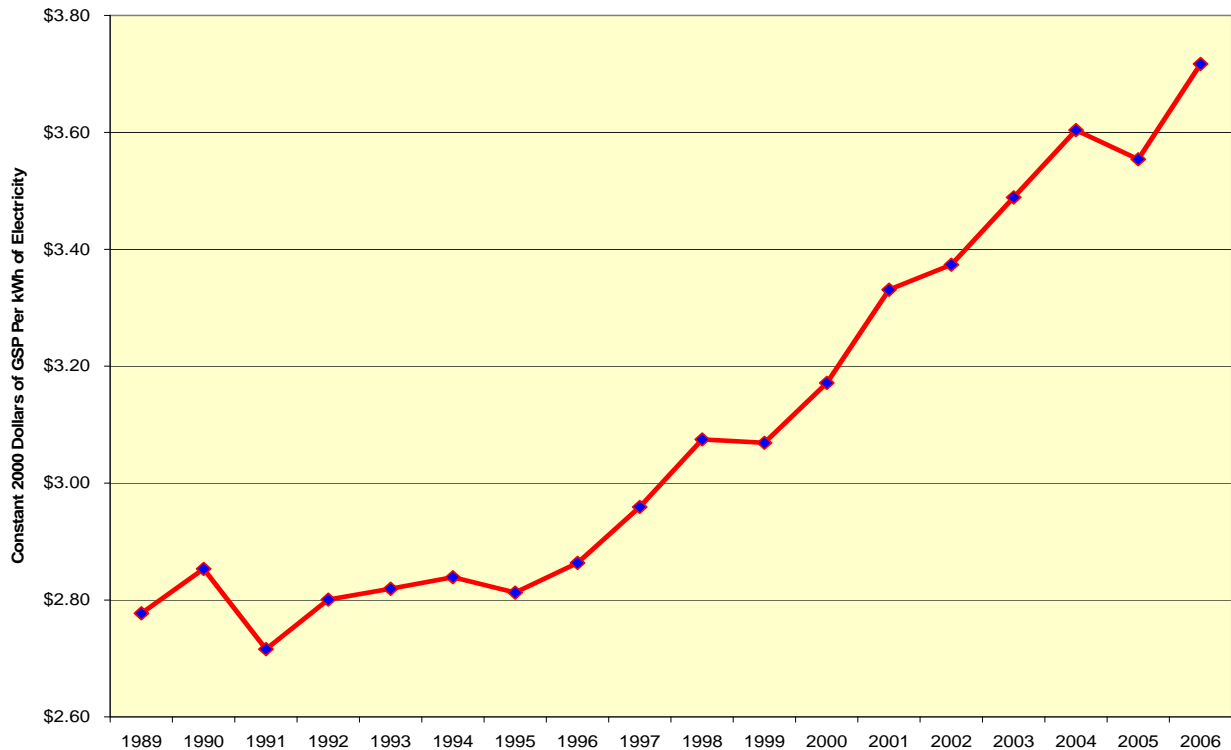
¹³ See: H.R. 6, enacted August 8, 2005, available at: <http://www.govtrack.us/data/us/bills.text/109/h6.pdf>

¹⁴ See: ISO New England 2007 Regional System Plan, Executive Summary, page 4

In addition to anticipated growth in Vermont and New England electricity demand, existing and new national, regional and state environmental goals¹⁵ have accentuated the need for clean, demand-side resources, such as wind power. The 2007 ISO New England Regional Plan emphasized this need, stating:

“The portion of electric energy that renewable resources and energy efficiency will need to provide of New England’s total projected energy use will increase to approximately 18.7% by 2016, up from about 5.1% in 2006. State requirements for new energy efficiency programs make up about 4.7% of the 18.7%; the remainder is attributable to Renewable Portfolio Standards [RPS] and related policies. If all projects in the ISO Generator Queue [among which is the proposed Deerfield Wind project] were built, the ISO estimates that they would meet 81% of the need for the growth of new renewables...By 2016, the region will need significantly more renewable projects than those currently in the ISO’s Generator Interconnection Queue to meet the projected growth in the RPSs of the New England states. If some of the proposed projects are withdrawn from the existing queue, as consistent with past experience, this need will be even greater...”¹⁶

Chart 6 - Real Vermont Gross State Product Per kWh of Electricity Sold
 (Sources: U.S. Energy Information Administration, DOE and New England Economic Partnership)

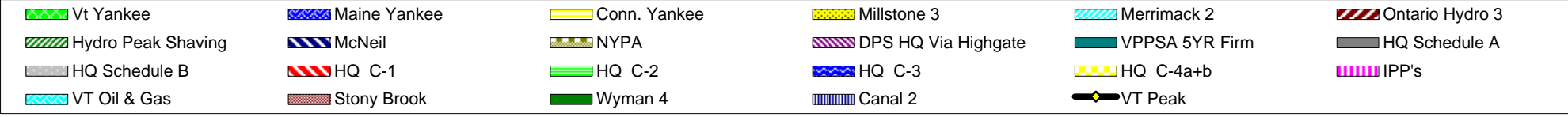
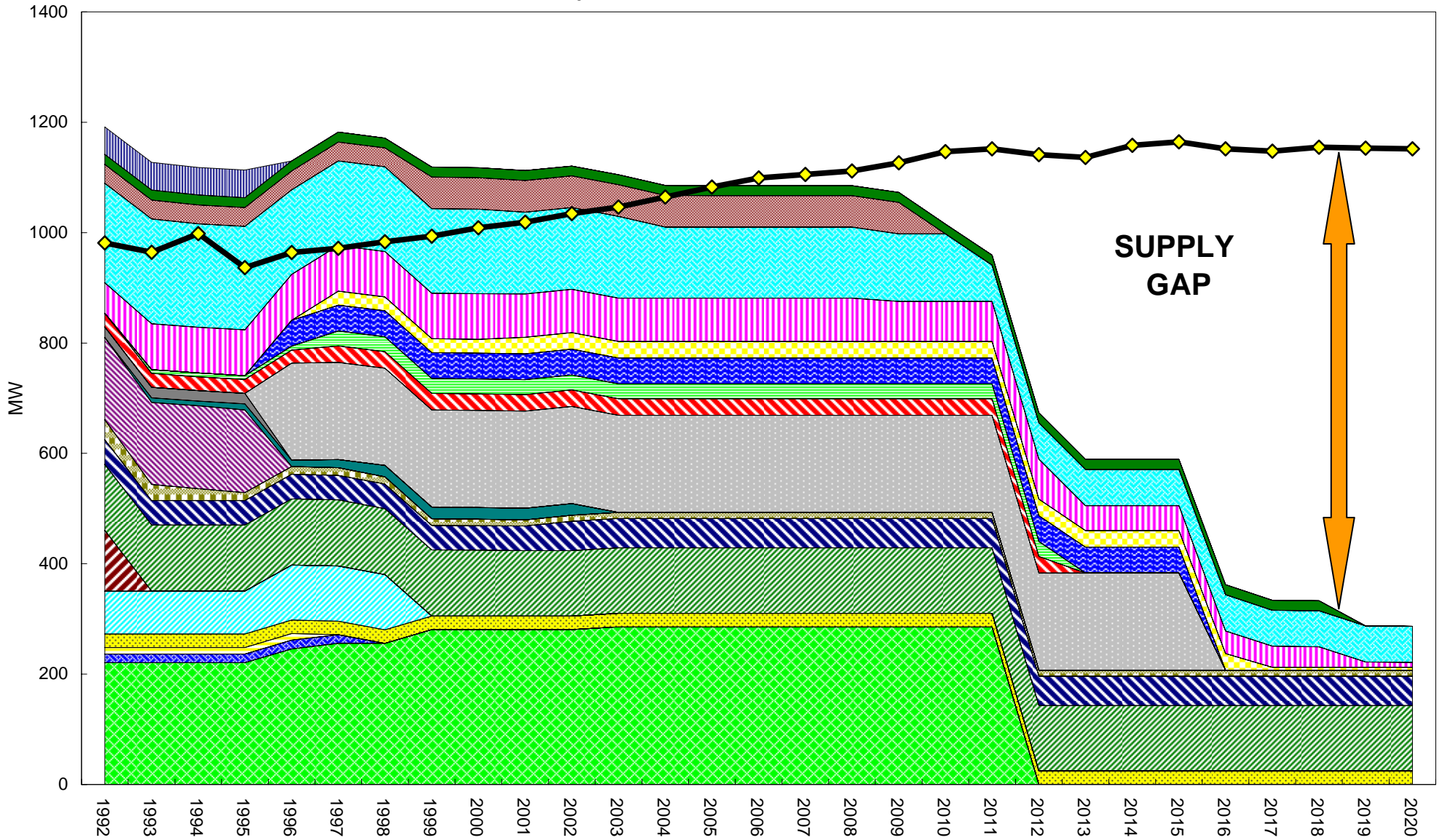


¹⁵ Ibid. page 57, for a discussion of new air emission programs

¹⁶ Ibid. page 72, also available at: http://www.iso-ne.com/trans/rsp/2005/05rsp_es.pdf

Chart 7 - Vermont Committed Resources vs. Annual Peak Needs

Source: Vermont Department of Public Service, 2005 Vermont Electric Plan



Gains that can be realized by energy efficiency measures are illustrated in the dramatic improvement in the ratio of economic output, as measured by real Gross State Product (GSP), per kilowatt hour of electricity consumed in Vermont (see Chart 6 on the preceding page). As noted by the ISO Regional Plan, however, efficiency programs cannot alone offset anticipated growth in energy demand. Even with greatly enhanced conservation and efficiency programs, there will still be a need for significant additional generating capacity to accommodate economic and population growth in Vermont and New England over the next ten years, in addition to new requirements for expanded renewable energy substitution.

The expiration of contracts and licenses with the State's two largest energy providers, Vermont Yankee and Hydro Quebec, over the next six years (see Chart 7, following page, based on data and illustrations used in the Vermont Public Service Department 2005 Energy Plan) accentuates the need for alternative energy sources that are reliable and competitively priced. The impending "supply gap" illustrated in Chart 7 demonstrates the magnitude of the issue at hand and the time frame within which action is necessary.

Although the State could still purchase energy at market rates to fill this gap, the price of such power would be subject to volatile fuel prices, supply disruptions, and short term fluctuations in market demand. These factors are behind recent market price increases and could render future electricity prices in Vermont more uncertain and costly. Obviously, wind power cannot replace the two-thirds of Vermont electrical production capacity now represented by these expiring generating sources, however, it can be an important and growing part of the solution by providing renewable and emissions-free energy from a fuel source not subject to fuel cost volatility, supply disruptions or competitive demand pricing pressures.

Environmental Issues

Legislation was enacted in Vermont in 2005 to create "renewable portfolio standards for sales of electric energy"¹⁷ (RPS), bringing the State into alignment with similar policies in other New England states. The purpose of this legislation, entitled Act 61, was to formalize relatively flexible requirements to encourage the development and use of renewable energy sources within the State.

Act 61 requires electricity providers in Vermont to supply "an amount of energy equal to its total incremental growth between January 1, 2005 and January 1, 2012 through the use of electricity generated by new renewable energy resources." While this may initially be done through voluntary means, if the utilities fail to meet this goal, the Public Service Board may impose a formal RPS requirement. In order to facilitate the establishment of long term renewable purchase contracts between utilities and renewable project developers, the State has launched a program called "SPEED" (for Sustainably Priced Energy Enterprise Development). This legislation further underscores the need for and public interest in the development of renewable energy projects such as that proposed by PPM. Although the rules vary by state and are complex, the ability to satisfy Vermont and other New England state RPS requirements by developing and/or trading

¹⁷ See Vermont Statutes, Sec. 3. 30 V.S.A. § 8004 "Renewable Portfolio Standards for Sales of Electric Energy"

renewable energy credits will increase the overall demand for new sources of renewable energy, adding to the clear regional and State need for the type of generating capacity offered by this project.

In Vermont alone, the New England ISO forecasts that new renewable resources will need to generate 500 GWh of electric energy annually by 2016 (assuming these standards are extended to 2016) in order to comply with this standard.¹⁸ The proposed Deerfield Wind project would satisfy nearly one-fifth of this requirement.

Vermont and nine other northeastern states also recently agreed to form the Regional Greenhouse Gas Initiative (RGGI) in order to cap CO₂ emissions from electric generators in those states that are larger than 25MW capacity. The program, which is a “cap and trade” program beginning in 2009, represents an additional imperative to renewable energy development in the region and, according to the 2007 ISO Regional System Plan, suggests “that the region would need to add substantial low- or zero- CO₂ emitting resources to the region to meet the RGGI allocation.”¹⁹

5) Attendant Issues – Avoided Emissions, Property Taxes and Tourism

Avoided Emissions Estimates and Global Warming

While there is no doubt that the presence of clean, wind-driven electric power generation will reduce the need for some fossil fueled power generation in the region, it is impossible to know in advance exactly which power sources may be displaced by new wind power output at any given moment in time. This is because the ISO New England system operators, who govern the dispatch of generating units to the New England states, choose the mix of supplied energy based on production costs. Lower cost units are favored over higher cost sources, with the mix of plants and fuel sources that provide this marginal capacity changing constantly with demand and available supply. In the short-run, the presence of a low cost energy source, such as wind, will result in the displacement of higher cost marginal units, which in New England are virtually all fossil fuel based (primarily gas-fired combined cycle units and gas and oil-fired units).

As a result of this, precise estimates of near-term avoided emissions are reliant upon the assumptions made regarding the mix of marginal power that will be replaced by new wind power at any point in time. This can result in a range of credible avoided emissions estimates, depending upon these and other assumptions.²⁰

¹⁸ ISO 2007 Regional System Plan, October, 18, 2007, page 66

¹⁹ Ibid. page 61

²⁰ See, for example, the testimony of Dr. Ezra Hausman of Synapse Energy Economics regarding potential impacts on estimated emissions from the implementation of cap-and-trade programs, such as the Regional Greenhouse Gas Initiative (RGGI), PSB Docket No. 7250, Exhibit DFLD-EH2, and related direct and rebuttal testimony of Dr. Hausman.

The Vermont Agency of Natural Resources in its fact sheet on “Wind Energy and Air Emissions,” states that:

“Every kilowatt-hour (kWh) produced from a wind turbine results in one less kWh being produced by a fossil fuel source. This is the case because in Vermont our primary fuel sources are nuclear, hydro and fossil fuel. Nuclear plants like Vermont Yankee do not change their output at all, and Hydro Quebec may change the timing of water releases, but the water will still flow through the turbine and produce electricity at some point. This means that the power that wind generation displaces is power that would otherwise be produced by fossil fuel generation. Reduction in fossil fuel use means a corresponding reduction in air emissions including CO₂, sulfur oxides and [nitrogen] oxides.”²¹

In this same document, the Agency estimates that a “single utility-scale wind turbine, by displacing power generated by fossil fuels, can prevent the emission of 5,000 tons of CO₂ into the atmosphere each year, as much as could be absorbed by 500 acres of forest.” By this estimate, the proposed Deerfield Wind project would reduce CO₂ emissions by some 75,000 tons per year, as much as could be absorbed by 7,500 acres of forest.

More detailed estimates of avoided emissions specific to this project have been made by Synapse Energy Economics in submissions to the Vermont Department of Public Service²² that estimate annual reductions during the first four years of operation of about 135,334,000 pounds of carbon dioxide, the primary source of global warming, about 520,000 pounds of sulfur dioxide, which causes acidification in lakes, streams and soils via acid rain, about 190,000 pounds of nitrogen oxides, which lead to ozone formation, smog, and human respiratory damage, and related reductions in other hazardous particulate matter. As indicated in the Synapse analysis and testimony, as these estimates go out in time, they may decline, as the displaced power becomes either cleaner or more efficient, or both.

These emissions represent a significant negative externality associated with the production of power from fossil-fuel sources. Because the ultimate costs of these externalities are unknown, their precise economic value is difficult to quantify. It is impossible to know, for example, how expensive global warming may ultimately prove to be, or the true “cost” of human illness and suffering. By one approach, using very conservative valuations accepted by the Vermont Public Service Board in 1999, adjusted for inflation, the monetized value of the air emissions that would be avoided by this project would exceed \$850,000 per year.²³ Over the project’s expected initial operational period of at least 20 years, this would amount to more than \$17 million in constant 2008 dollars.²⁴

²¹ See: <http://www.vermontwindpolicy.org/factsheets/Air%20Emissions1.pdf>

²² See Prefiled Rebuttal Testimony of Ezra D. Hausman, July 2008, submitted to the Vermont Public Service Board, in PSB Docket 7250.

²³ See Vermont Public Service Board Docket 5980, page A-22, Order entered on 9/30/1999, which valued avoided negative externalities at 0.7000 cent/kWh. In current 2008 dollars, this would be approximately 0.8897 cent/kWh, or \$851,126 per year.

²⁴ As noted in the preceding paragraph, these impacts may diminish over time, if cleaner, more efficient power is ultimately displaced.

It is clear that the use of any reasonable assumptions associated with the power to be displaced by electrical generation from the proposed Deerfield Wind project will yield significant environmental benefits and avoided environmental costs to Vermont, New England and beyond.

Property Tax Valuations

The net property tax valuations used as economic model inputs herein considered the issue of potential property valuation declines associated with parcels in close proximity to the proposed wind turbines. After an extensive literature review of the topic, it was determined that there was no empirical basis for any negative town or county adjustment for this effect. Although there is no question that there are individual property owners and potential property buyers who consider the proximity of wind turbines to be undesirable, there is no evidence that these opinions result in measurable negative impacts in aggregate town or county-wide property sales prices and valuations.

In fact, there may be some net positive property valuation effects beyond the direct property tax payments from the project. By significantly reducing town-wide property taxes, the demand for properties in the affected areas would increase, and hence their valuations would be expected to increase. These additional positive effects, which would probably occur over an extended time period, were not estimated or included in the model inputs used in this analysis.

Most extant analyses on the topic of property valuations and proximity to wind farms are based on anecdotal information from affected property owners, local realtors, wind farm proponents or wind farm opponents. Few are scientifically constructed studies with any meaningful statistical significance.

The most rigorous, unbiased study on this topic to date is an analysis initially performed at Bard College by Ben Hoen, focusing on property valuation changes associated with the Fenner wind farm in New York State.²⁵ This study is currently being extended via similarly comprehensive analyses of other wind farm sites by Hoen and Dr. Ryan Wiser, under the auspices of the venerable Lawrence Berkeley National Laboratory.²⁶

The initial Hoen study found that:

“Our analysis of 280 home sales within 5 miles of the Fenner windfarm, in Madison County, New York failed to uncover any statistically significant relationship between either proximity to or visibility of the windfarm and the sale price of homes. Additionally, the analysis in this report failed to uncover a relationship even when concentrating on homes within a mile or that sold immediately following the announcement and construction of the windfarm.”

²⁵ “Impacts of Windmill Visibility on Property Values in Madison County, New York”, April 30, 2006, by Ben Hoen, Bard Center for Environmental Policy, Bard College

²⁶ The Lawrence Berkeley National Laboratory is the one of the best known and oldest of the nation's U.S. Department of Energy National Laboratories. There are currently 10 Nobel Laureates associated with the Laboratory.

The study concluded, that:

“Contrary to the notion that adverse effects are universal, this report did not produce any significant relationship between distance from, or visibility of the windfarm and the sale prices of homes. These results fit with those reported in other empirical studies that surveyed public attitudes, which found that people living near turbines find them “acceptable” and, in fact, rarely spontaneously mention them (Braunholtz and MORI-Scotland, 2003).”

Although the expanded study has not been completed as of this date, it is expected to be released in the fall of 2008. In the meantime, Ryan and Hoen have reported preliminary findings based on an ever-increasing sample size of properties sold and wind farm sites analyzed. Based on their analysis of 3,638 property transactions associated with six wind projects to date, they have found no results contrary to the initial study.²⁷ Their preliminary findings include:

- There is no statistically significant evidence that views of wind turbines have a measurable impact on property resale values, even among properties in relatively close proximity to wind turbines.
- Even homes located very near a wind facility (within one mile and within half a mile), with or without a view of the facility, do not seem to have statistically significant property resale differentials.
- Home values were not affected in a statistically measurable way based on the number of miles from a home to the nearest turbine, the number of turbines visible from the home or the viewing angle over which turbines can be seen from the home.

Another extensive and particularly relevant study on this topic is an analysis by the Renewable Energy Policy Project (REPP) that included the existing Searsburg wind farm as one of the sites analyzed.²⁸

The REPP report, published in May of 2003, examined more than 3,300 individual property transactions in and around the Searsburg wind farm, before and after its construction. As the only commercial wind farm in Vermont, and in the specific rural location of the proposed project, the Searsburg analysis has particular relevance to this project. In all three of the statistical regression models used in this analysis, the authors found that “average sales prices grew faster in the viewshed than in the comparable area” following construction of the wind turbines. The analysis of the Searsburg facility concluded that, “there is no significant evidence that the presence of the wind farms had a negative effect on residential property values.” The same report, which studied eight other U.S. wind farms in comparable detail, found “no evidence that wind development has harmed property values within the view shed.”

²⁷ Based on a presentation by Wisner and Hoen, entitled, “The Impact of Wind Facilities on Residential Property Values,” presented at the American Wind Energy Association Conference, November 1-2, 2007.

²⁸ *The Effect of Wind Development on Local Property Values*, by the Renewable Energy Policy Project, May 2003, available at www.crest.org/articles/statis/1/binaries/wind_online_final.pdf

While actual property transactions data are the only conclusive basis for measuring valuation changes due to the presence of wind farms, the most objective anecdotal information on this topic probably comes from tax assessors. A 2002 analysis employing an extensive survey of tax assessors in 13 U.S. counties, containing 22 recently developed wind farms, found “no evidence indicating that views of wind turbines decreased property values.”²⁹ The study also opined that “[o]ne of the likely reasons that wind turbines do not diminish property values is that not all people agree that views of wind turbines are undesirable. As reported by the tax assessors, some residents find views [of] the wind turbines attractive. If a homeowner dislikes having a view of the wind farm, they may move and sell their house to someone who likes the view. In this case property values would not be diminished.”

Based on the above analysis and review, we find no basis for a negative property valuation adjustment to the economic model used herein and believe the model inputs for net property tax changes in Bennington County represent conservative assumptions regarding the economic impact of the proposed development. In addition to using minimum local property tax payments for the proposed wind farm, the demand and property valuation effects from lower property taxes in Searsburg and Readsboro could provide further economic benefit to the region than presently estimated.

Tourism Impacts

Potential tourism impacts – both positive and negative - associated with the proposed wind farm were also considered in specifying the economic impact model. Given the substantial tourism industry in Vermont and Bennington County, this is a topic of heightened local importance. Following a thorough literature search of academic and other articles on this topic and the specific characteristics of the local tourism sector, we find no empirical basis for a significant adjustment – positive or negative – to likely tourism visitation or expenditures as a result of the proposed wind farm development in Searsburg and Readsboro.

As is the case with property valuations and view preferences, there are conflicting perspectives on whether or not the presence of a wind farm will result in any positive or negative tourism response. As is also the case with property valuation impacts, the analyses performed to date are largely anecdotal and, if scientifically designed (which few are), are survey-based, not outcome-based. While surveys can be valuable indicators of future expectations, opinion and preference, they often do not conform to actual expenditure patterns. There have been no empirical studies that measure regional tourism expenditures before and after a wind farm development, with valid control regions. Without such data it is impossible to assign and quantify a meaningful adjustment metric for tourism expenditures.

There is considerable evidence that wind farms in a number of U.S. and international sites have become tourism draws, including the existing Green Mountain Power facility in Searsburg. A report issued by Renewable Energy Vermont states that “[t]he Mt. Snow Haystack Regional Chamber of Commerce reported that of those who made

²⁹ *Economic Impact of Wind Power in Kittitas County*, by ECONorthwest, November 2002, available at www.kvalley.com/phoenix/Kittitas%20Wind,%20final.pdf

inquiries, about 10% asked for information about the turbines in Searsburg.³⁰ There were approximately 1,000 visitors to the Searsburg wind farm reported in 2005.³¹ Many other wind farm sites are listed as local “tourist attractions.”³² Some sites plan for and encourage tourism, with visitor centers, educational and informational programs, the opportunity to climb wind towers to enjoy the “spectacular views,”³³ and even “the unique experience of staying overnight [at] an operating wind farm” at one Minnesota facility.³⁴

If there were formal plans to attract visitors to the proposed Deerfield facility, including the development of a visitor center, guided tours, tower viewing platforms and related promotional activities, it is possible the development could represent a measurable tourism enhancement to the area.³⁵ Without this, there will be some tourism interest, especially since the towers will be visible from parts of nearby State Highways 8 and 9, but probably not extensive enough to warrant any upward model adjustment.

It is also worth noting that while tourism is an important part of the regional and Vermont economy, it is not as significant in Searsburg and Readsboro as elsewhere in the State. Neither Searsburg nor Readsboro were listed as towns reporting taxable meals, rooms or alcohol receipts in fiscal years 2000 (FY00) through fiscal year 2007 (FY07), nor were six of the eight towns that are contiguous to Searsburg and Readsboro.³⁶ The two contiguous towns that are listed, however, Dover and Wilmington, reported significant meals, rooms and alcohol receipts, indicating a sizeable tourism sector in these two locales.

These two towns reported taxable FY07 meals, rooms and alcohol receipts totaling nearly \$31 million, about one-third of all Bennington County receipts and nearly 2.5% of the State total. Of these two towns, Dover was considerably larger, reporting about \$22.5 million in taxable receipts, while Wilmington reported about \$8.5 million. Of the 103 reporting Vermont towns in FY07, Dover was the 17th largest, while Wilmington ranked 31st.

³⁰ See *The Economic Benefits of Wind Farm Development in Vermont*, Renewable Energy Vermont report by Douglas Hoffer, available at http://www.revermont.org/windfarm_benefits.pdf

³¹ See Prefiled Direct testimony of John Zimmerman, Deerfield Wind Project, at page 49, January 2007

³² See, for example, the Green Mountain Wind Farm near Garrett, PA, as listed in the local public library page: www.meyesdalelibrary.com/tgreen.html; The Fenner Wind Farm in Madison County, NY, featured in the County's tourism guide at: <http://www.madisontourism.com/showmem.php?category=Things%20to%20Do>; The Prince Edward Island wind farm in Canada, which boasts a visitor center, restaurant and gift shop; The Tierras Morenas Wind Farm located on pristine Lake Arenal in Costa Rica, which is advertised as an attraction for visitors at lakeside hotels; and the Palm Springs Wind Farm, in Palm Springs, California, a major tourist destination, which draws 6,000-10,000 visitors per year, despite charging \$10-\$25 per visitor.

³³ As reported at the Swaffham, Norfolk (UK) wind farm, where “over 50,000 tourists have climbed the wind turbine tower.” See: http://yes2wind.com/tourism_debunk.html, December 19, 2005

³⁴ The Buffalo Ridge Wind Towers are listed as a tourist attraction in the Hendricks, MN area, and offer overnight stays. For more information, see: www.hendricksmn.com/wind_towers.html

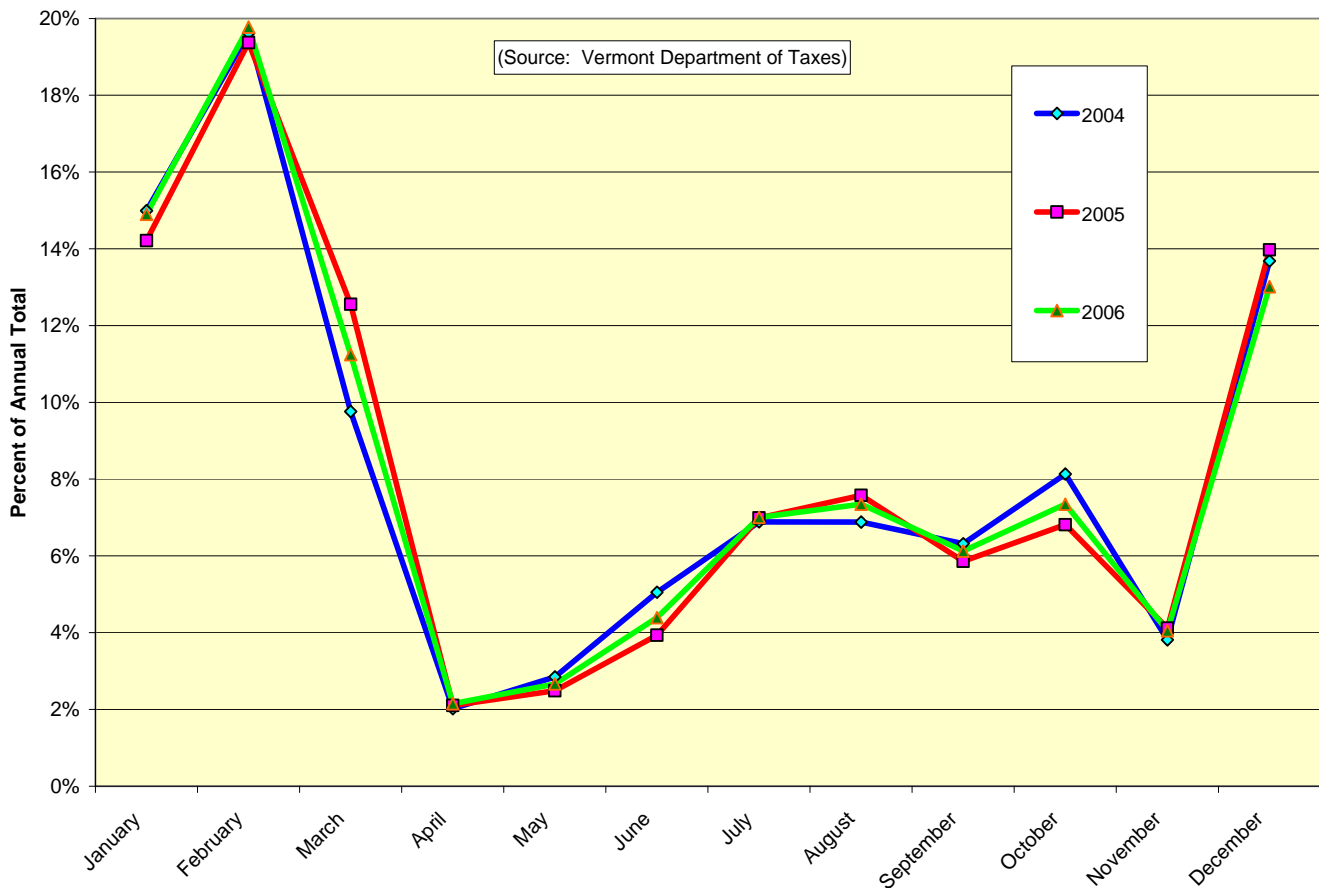
³⁵ In order to avoid any potential negative wildlife impacts, and in response to Vermont Agency of Natural Resources concerns regarding bear habitat, limitations on tourist visitation at the Searsburg wind farm have been placed on the facility. Similar restrictions would probably need to apply in the case of the proposed facility if tourism visitation was to be promoted.

³⁶ These six towns include Stamford, Woodford, Glastenbury, Somerset and Whitingham. It should be noted that the absence of a listing could mean that either there are no taxable receipts, or that there are fewer than 10 reporting units in the town, thus creating disclosure issues. Readsboro has one listed food service enterprise and one hotel (both part of the Readsboro Inn), Searsburg has none. In either case, the paucity of taxable meals, rooms (especially) and alcohol revenues and/or hospitality establishments suggests that potential negative fiscal impacts are relatively minor in such unlisted towns.

The proposed project will be visible from a number of sites in Wilmington and a few locations in Dover, mainly from the higher southwest-facing elevations, as is the case with the existing Searsburg wind farm.³⁷

The dominant tourist attraction in the area is the Mt. Snow/Haystack ski area in Dover. Although there are many other recreational attractions in the vicinity, the economic impact of winter sports activities in the region is apparent in the monthly distribution of tourism expenditures displayed in the below Chart 8. As illustrated in the chart, nearly 60% of all meals, rooms and alcohol expenditures in Dover and Wilmington occur in the

**Chart 8 - Share of Annual Taxable Meals and Rooms Receipts in Dover and Wilmington, Vermont
2004, 2005 and 2006**



winter period between December and March, nearly double the statewide average.

This tilt towards winter tourism in the region is significant in that, as a class of tourists, skiers are among the most concerned with the effects of global warming and among the most receptive to the benefits of wind power. A recent article from the National

³⁷ See viewshed map at Docket No. 7250, Exhibit DFLD-JV/MB-8

Geographic News pointed out that 22 ski resorts in 7 states now use wind power credits to supply 100% of their electricity demands, including high profile resorts such as Vail, Jackson Hole, Aspen, Beaver Creek, Snowmass, Breckenridge, Keystone, Sugarloaf and many smaller resorts such as Mount Sunapee (NH), Wolf Creek (CO), Sugar Bowl Resort (CA), Crested Butte (CO), Heavenly Mountain (NV), Mt. Ashland (OR), and in Vermont, Okemo.³⁸ Together, these areas purchase 305,074,498 kilo-watt-hours (kWh) of clean electricity and keep about 372,282,234 pounds of carbon dioxide from entering the atmosphere.³⁹ Jiminy Peak recently constructed a wind turbine atop its ski area in Massachusetts, providing nearly a third of all the power required to run the resort (see below photo).



Nearby Stratton Mountain in Vermont is also among those ski areas now offsetting 100% of its electricity consumption with renewable energy credits.

Based on the eleven year experience associated with tourism impacts from the current wind farm in Searsburg, the preponderance of winter ski-related tourism in the area and the absence of any credible scientific studies that associate negative tourism impacts with the presence of wind turbines, it is likely that any economic impacts on the tourism sector in the region from this project – positive or negative - are likely to be negligible.

³⁸For a complete list and details, see the National Ski Areas Association, at:
http://www.nsaa.org/nsaa/environment/the_greenroom/index.asp?mode=greenroom&topic=T07
³⁹ See: <http://news.nationalgeographic.com/news/2007/01/070109-green-skiing.html>

In-State Purchases of Deerfield Wind Power

Although no contracts exist at the present time regarding in-State purchases of the power to be produced by the proposed Deerfield Wind project, negotiations are underway with Green Mountain Power to purchase at least 50% of the facility's output at fixed-rates for an extended period of time. DWL is interested in securing in-state purchase contracts for all of the power produced at the Deerfield Wind Farm. If this occurs, there could be significant additional positive economic impacts to the State and region from access to stably-priced electric power, contingent upon specific contract provisions and prices. These impacts were not included in the economic model, and thus represent additional potential benefits from the project to the State of Vermont and any specific region of the State served by such sales agreement(s).

6) Summary and Findings

We find that the proposed Deerfield Wind project in Searsburg and Readsboro will have significant economic and fiscal benefits to the State of Vermont, Bennington County and the local host municipalities. We also find that this project is an important component in meeting the present and future demand for competitively-priced electric energy and clean, renewable power in the State and region, as mandated by recent statutory initiatives.

The generation of electricity to power Vermont and New England homes, industry and commercial businesses over the next decade involves trade-offs in costs, environmental impacts, economic benefits and reliability. As a rare local Vermont energy resource, wind power offers unique advantages when compared to existing and alternative energy sources. It emits no greenhouse gasses or other environmental pollutants and displaces existing generating facilities that foul the air and pose grave ecological risks. It is a renewable energy source with fixed production costs over very long periods of time, enabling price stability at competitive rates. And, it is a sustainable resource that generates not just electricity, but permanent jobs, income, tax revenues and wealth for Vermonters. Wind power from projects such as the proposed Deerfield Wind facility is not the only answer to Vermont and New England's energy needs, but it is an essential part of the solution.